OPUNTIA HEACOCKAE (CACTACEAE) A NEW SPECIES FROM CENTRAL COLORADO

GERALD K. ARP

Principal Research Geobotanist, Arco Oil and Gas Co., Dallas, TX 75221

For years it has been known that a dwarf, dry fruited opuntia grows in the mountains of central Colorado. The plant came to be known under the name of *Opuntia schweriniana* K. Schum. (1899) after Boissevain and Davidson missapplied the name in their book, Colorado Cacti (1940). At first glance the cactus appears to be a dwarf, nearly spineless form of *Opuntia polyacantha* Haw. Not until 1970 was the true nature of this taxon evident. At that time, during analysis of populations of this plant, it was found that the dwarf opuntia develops areoles, glochids, spines and pads from its cordlike roots in addition to occasional tubers on some of its finer roots. These features clearly separate the dwarf opuntia from *O. polyacantha* and provide a method of asexual reproduction which allows *Opuntia heacockae* to survive and colonize high altitude habitats that are otherwise not accessible to other opuntiads in Colorado.

OPUNTIA HEACOCKAE Arp, sp. nov. (Figs. 1–6).

Plantae coloniales, habitu pumilo, areolas, glochidia, spinas, articulosque ex radicibus funiformibus efferentes; articulis parvis, 2.5–5.5 cm longis complanatis, obovatus, flavovirentibus, variabiliter spinulosis; floribus rotatis, flavis vel roseis, 4.5–5.5 cm diametro; fructu baccam parvam siccam cyanthiformem usque ad 1.6 cm diametro.

Joints compressed obovate, 1.2–4.5 cm wide, 2.0–5.5 cm long and 5.0–10.0 mm thick. Epidermis yellow-green, tuberculed and often shriveled on the older joints. Areoles oval 1.0–3.0 mm long, composed of short gray hairs (when young) with brown glochids to 2.0 mm long and minutely barbed. Spine bearing aeroles mostly on the upper portions of the pad. Spines 0–4 per areole, 1.5–2.5 cm long and 1.0 mm in diameter, tan to yellow when young and gray with age; either erect or suppressed; basally flattened in cross section with occasional long spines circular in cross section. Leaves green, acuminate and early deciduous. Colonies to 50 cm in diameter with numerous interconnected colonies scattered especially below the parent. Roots either fibrous or tuberous. Tubers when present, spindle shaped to 5.0 cm long and 1.0 cm in diameter. Fibrous roots of two types, short feeder roots which reside beneath the plant and cordlike roots which radiate away from the plant. Cordlike roots to 2.0 m in length, 1.0 cm in diameter; giving rise to spine and glochid bearing areoles and new joint and joint clusters along

SIDA 10(3): 207–210. 1984.

their length; the phenomenon is common and widespread. Flowers rotate 4.5 to 5.5 cm diameter, petals yellow to pink, entire, mucronate, to 7 mm wide and 15 mm long. Stigma lobes 7, green, to 4.0 mm long. Fruit a cup shaped berry, 1.8–2.5 cm long and 1.6 cm diameter nearly or completely spineless, tuberculate and dry at maturity. Seeds white, irregular, 3.5 mm wide, 4.0 mm long and 1.0 mm thick.

TYPE: COLORADO. CHAFFEE CO.: south facing slopes 5.7 mi W of Trout Creek Pass, at 9340 ft elev. in open pinyon-juniper woodlands, 17 Apr 1984, *G. K. Arp 4841* (HOLOTYPE: SMU; ISOTYPES: CSU, POM).
Additional specimens: *G. K. Arp 1427, 1430, 1431, 1432, 1433, 1437* (COLO) and *4846, 4847* (SMU).

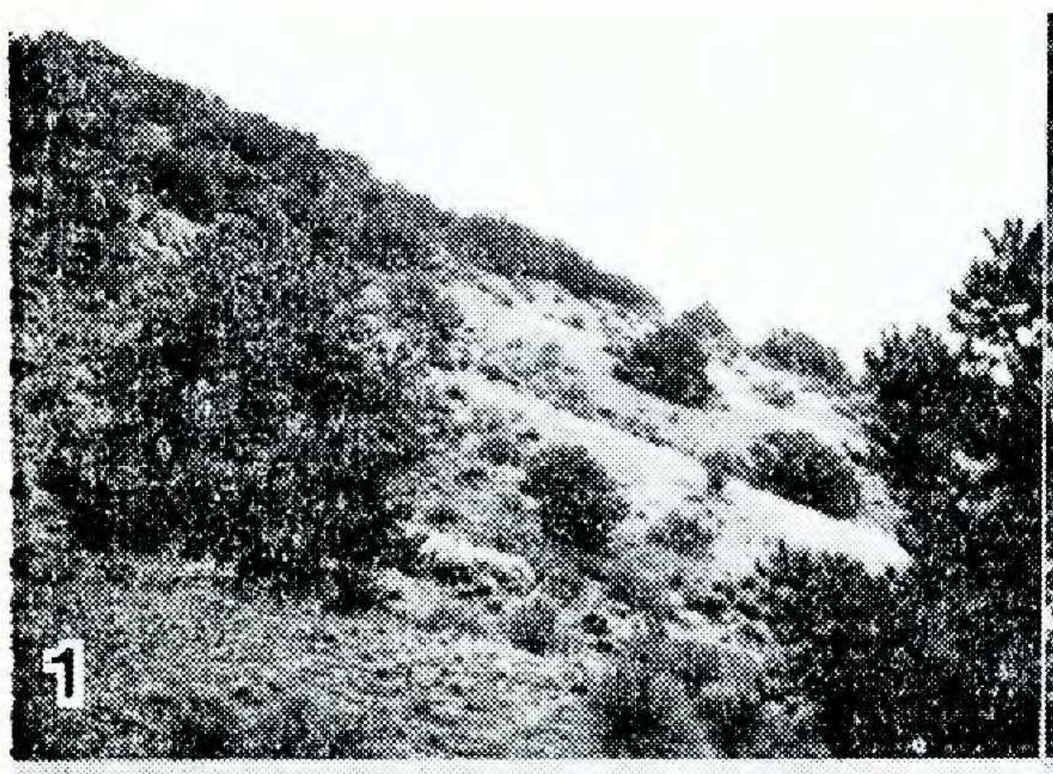
DISTRIBUTION: Head waters of the Arkansas River from the slopes of the Collegiate Peaks to Trout Creek Pass and from Buena Vista to Salida. Also in the head waters of the Gunnison River to the Morrow Point Dam and west to Cortez, Colorado. Possibly also in the northwestern portions of state near Maybell, Moffat Co. Colorado.

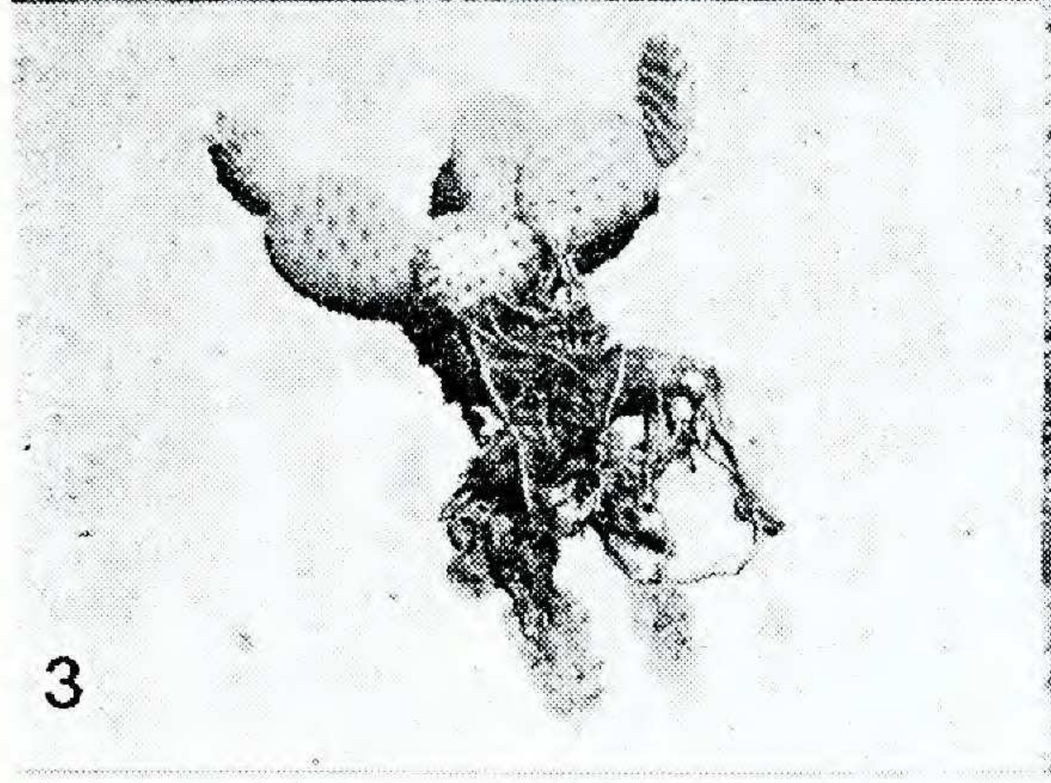
DISCUSSION

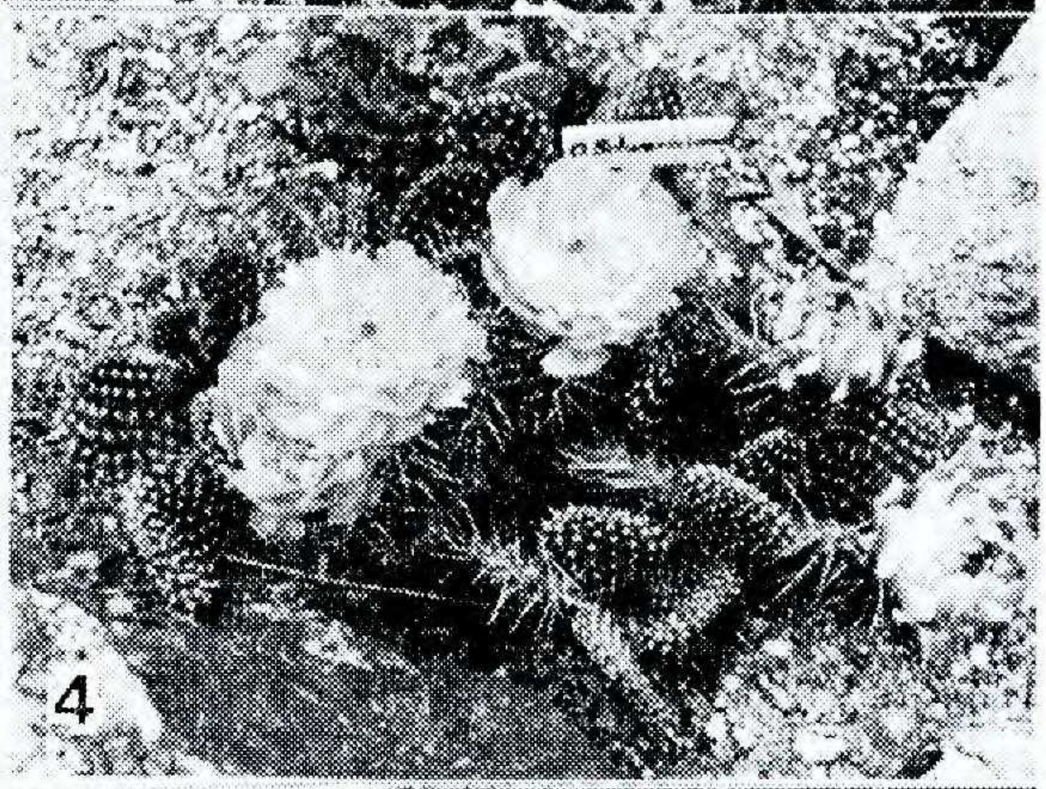
Opuntia heacockae is named for Mrs. Mary Ann Heacock of Denver, Colorado, a student of North American cacti for over 40 years. *Opuntia heacockae* has long gone under the name of *O. schweriniana* Schum. which is in reality a synonym of *O. fragilis* (Nutt.) Haw. according to Benson (1969, 1982). The plant differs from Schumann's original description in pad shape, most factors of spination, areole characteristics and all aspects of root sprouting. Lengthy garden studies confirm the dwarf habit, the root sprouting characteristics and the stability of other morphological features that distinguish the plant.

While many authorities have referred the plant directly to *Opuntia polyacantha* Haw., *O. heacockae* is actually intermediate between *O. polyacantha* a widespread great plains species and *O. arenaria* Engelm. a sand dune inhabiting species from near the Rio Grande River in southern New Mexico and Western Texas. With *O. polyacantha* it shares similarities of pad shape and some aspects of spination. With *O. arenaria* it shares its dwarf habit, its production of aeroles, glochids, spines and new pads from the cordlike roots. From both species *O. heacockae* differs in its production of occasional tuberous roots and its unusual high altitude distribution.

Confusion over the misapplication of *Opunia schweriniana* is traceable to the fact that both *O. fragilis* and *O. heacockae* occur at the type location of Schumann's *O. schweriniana*, i.e. old Sapinero, Colorado, along the Gunnison River. Old Sapinero is now covered by the Blue Mesa Reservoir, but it is still possible to find both taxa in the area and they should be expected throughout the Gunnison River valley.







Figs. 1-6. Habitat (1), plant habit (2), plant exhibiting tuberous roots (3), flowering plant in garden of M. A. Heacock (4), three subsidiary clusters with attached cordlike roots (5), habit photo showing parent plant with attached subsidiary clusters, note connecting root (6).

ACKNOWLEDGEMENTS

I would like to thank Wm. F. Mahler and Barney L. Lipscomb for their assistance in the preparation of this manuscript and Paul A. Fryxell for the Latin diagnosis.

REFERENCES

BENSON, L. 1969. The cacti of Arizona, Univ. of Arizona Press. Tucson, Arizona.
_____ 1982. The cacti of the United States and Canada. Stanford University Press. Stanford, Calif.
BOISSEVAIN, C. H. and C. DAVIDSON 1940. Colorado cacti. Abbey Garden Press. Pasadena, Calif.
SCHUMANN, K. 1899. Monatsschr. Kakteenk. 9: 148.